

## ABSTRACT OF THE DISCLOSURE

A mixer apparatus for use with a vessel centered about a longitudinal axis is disclosed. The mixer has a tubular blade which: defines a central head axis; has a first end and a second end spaced from the first end along the head axis; and tapers from the first end to the second end. The inner surface of the blade and the second end define an inside blade diameter "ID" and the outer surface of the blade and the first end define an outer blade diameter "OD". The blade is positioned within and coaxial to the vessel. A scotch yoke, operatively connected to the blade by a shaft, effects reciprocating longitudinal movement of the blade through a stroke "S", with a duration "T" for each cycle, wherein  $175 \lesssim 0.36 \times OD^2/ID^2 \times S/T \lesssim 250$  when OD, ID and S are expressed in inches, and T is expressed in minutes.